

The Institution of Engineers, Australia: Sydney Division
Engineering Heritage Committee

ORAL HISTORY PROGRAM

INTERVIEWEE: Keith Ward

TAPE NUMBERS: IEA SYD FH43 & FH44

INTERVIEWER: Frank HEIMANS

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INTERVIEW TAPE LOG

Tape: IEA SYD: FH43 Side A

TAPE COUNTER	SUBJECT	NAMES & KEYWORDS
000	Start of Tape IEA SYD: FH43 Side A	
008	Gives his name and details as Keith Ivor Ward, born at home at Edgecliff NSW, 4 April 1934, one of six children: three boys and three girls. Born during the Depression. Edgecliff was then a working class suburb, similar to Paddington and Darlinghurst. Father a labourer, WW1 serviceman, alcoholic – not involved in family life. Mother raised the children herself – earned income by washing and ironing. Died at 50 years of age. Lived in several houses in the area. including Paddington and Darlinghurst.	Parents, family Edgecliff Paddington Darlinghurst

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057	In 1947 at 13 years of age moved to housing commission house at Cabramatta – was then like moving to the country. Vacant land, scrub – nice town. Doesn't remember World War II. Attended Christian Brothers – Sacred Heart School at Darlinghurst (primary) and then Marist Brothers at Lidcombe as far as second year (did not achieve Intermediate – ie passing stage) and left school at 15 years of age.	Cabramatta Western Suburbs Schooling
086	Worked at several jobs before joining the Department of Main Roads (DMR). Further study was not a consideration, due to family's financial circumstances and need to support his mother and family. Leaving school was the main thing. First job was with Trip Travel Goods at Stanmore on the assembly line, making Gladstone bags, then shoemaking at Campsie, putting stiffeners in the back of heels. There met wife of Ron Face, St George Secretary and her friend had a son who was a mechanic at Stanmore. Spent two years as an apprentice motor mechanic. Left, as had difficulty at Tech. Attended Ultimo Technical College for twelve months. Then worked as a builder's labourer for a couple of years.	First jobs: Trip Travel Goods Stanmore Shoemaking Campsie Motor mechanic apprenticeship Tech College
149	Started with DMR in 1953 at Central Workshop. Brother-in-law got him the job – his father was on the gate. First job was on the road as a line marker. Worked on a jigger getting pushed along by a truck and applied the yellow and black paint to mark roads. That one line marker did the entire state, so he travelled throughout the state during the six months he lasted in that position. Had a four berth, a two berth caravan and a kitchen. Had a contract truck and a DMR truck which had a special permit to tow the two caravans. You cut your own wood and if you cooked dinner in the evening, you cooked breakfast also. Earned six shillings a day living away allowance. Pooled the money to buy food. Put his age up from 19 years to 21 years to earn a full male wage. Had to correct his age in 1974 when superannuation came in. Living conditions were good – bunked in the two berth caravan with Ernie Ashton. Foreman, Cliff Morrissey had his own vehicle and caravan.	1953 started with DMR Line marking gang Ernie Ashton Cliff Morrissey

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221	Leading Hand Tom Treacy drove the white truck, Ernie Ashton ('Asho') was the contractor. 'Birdie' steered the jigger and kept the pointer going down the lines. His brother-in-law drove the DMR truck. Young fellow Reg went home at Christmas and was killed on a motorbike.	Line marking gang Tom Treacy Ernie Ashton
235	That Christmas started with Asphalt. Started with two old hot mixing plants – an Armstrong Holland and a Nivens over at Central workshop at the front gate. With the Armstrong, asphalt was manually operated – weighed up the aggregate and bitumen to a level, then physically put it into the mixer, a pugmill, then dropped it into another bin and the truck would come back down underneath. A hopper would be filled, opened, and the truck would be filled. Five 5- ton truckloads per day was a big day. Drum had to be heated constantly during operation to keep mix moving. The Armstrong plant was coming to the end of its operation at this time. Ward stayed in this area about twelve months.	Asphalt Armstrong and Nivens mixing plants
273	Making of asphalt was all done by a ruler and gate settings. Depending on the type of asphalt being made, the men had to get the ruler out and lift the gate up or down to get percentages right. Not too much could go wrong with those plants. Lately the computer has fifty different mix formulations for making asphalt. In the 1950s there were three: a quarter- 20mm, thee eighths was the 10mm mix and AC5 was the five mm –refers to the size of the aggregate. Aggregate came mostly from PMG at Prospect, but also Boral and Pioneer supplied it. Used mostly a 20mm blue metal. Unsure of rock type – never asked. 5mm was the finished mix design for the finished coat.	Making asphalt Aggregate Number of mix formulations

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315	The Armstrong Holland and Nivens plants were shutdown and so moved across yard at South Metrop. and in 1955 commissioned two Armstrong Hollands which stood until 1974, at which time they were still going strong. The new plant worked like a Rolls Royce in comparison to previous plants at Central Workshop. Previously had to cut up 44 gallon drums of bitumen. Cut off both ends using an axe, split the drums down the middle and skinned them. Rolled it into the coal fired kettle. Area where metal deliveries were taken had no roof, due to a fire previously.	Replacement of Armstrong Holland and Nivens plants
341	Harry Bullenthorpe was the ganger and spent his day leaning on his anvil. Dave Nicholls operated the Nivens. Wally 'Sauerkraut' (so nicknamed for his luncheon preference) put the lime in for Dave.	Workmates Harry Bullenthorpe Dave Nicholls Wally 'Sauerkraut'
366	Asphalt was made for roads in Sydney area. Fifties, sixties and seventies a time of great expansion in the road making area. Got busiest during the later stage of the Armstrongs' life, ie late sixties, early seventies. Prior to that, one would work one day and the other the next. Rare to work both Armstrongs at once until the Campbelltown and Penrith Freeways were being built. Flat out during that time.	Campbelltown and Penrith freeways
395	Ward progressed to operating one Armstrong plant and Kenny Williams the other. This was the best money and so only had one operator each. Also had a burner operator, a kettle hand and two men under the feeders operating the reciprocating feeders that brought in the various mixes (aggregate). Still a manual operation and so required hard manual labour. Plant operators (Ward and Williams) weighed the material with air-operated cylinders and had to adjust feed rates which involved straddling the belts and lifting the doors up and down, which was heavy work.	Became an operator Kenny Williams Operation of Armstrong plants
432	End of Tape IEA SYD: FH43 Side A	

Tape: IEA SYD: FH43 Side B

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000	Start of Tape IEA SYD: FH43 Side B	
005	<p>Worked as a hot mix operator for thirty eight and a half years and six months on the line marker. Learnt the hot mix operation from the ganger Clem Ellis; a short, fat bloke who operated one of the Armstrongs. Kenny Williams, the other operator also trained Ward. One Armstrong was commissioned in April 1955 and the other in October 1955. Foreman Jimmy Archibald would bring down the roster and location of where trucks had to go and type of mix required. Clem's role as ganger involved organising the people – told the operator what type of mix to make and directed truck loading. Might say - six loads of three quarter mix (as referred to then) that was AC20 – the operator would make the six loads and then Clem might, say – do six loads of five mm, AC5. Clem also organised bitumen and lime dust which was used in those days. A chap cut the bags of lime and placed it in the bucket elevator that went up to the hopper and lime would be drawn from there. Sun would be belting down and they would be cutting truckloads of lime bags per day. Lime was used as a filler.</p>	<p>Learnt the hot mix operation from Ganger Clem Ellis and Kenny Williams</p> <p>Foreman Jimmy Archibald</p> <p>Lime</p>
049	<p>Hot mix was 160 degrees centigrade or 320 degrees Fahrenheit. Ward would tell the chap under the feeders what type of mix to put on. It would come up through the dryer drum and the burner operator, Jimmy Davis, would put the burners on to heat the material to the correct temperature. Upstairs Ward would mix it and Davis would take temperatures. Operator Ward would be standing directly above everything including the truck, and the pug mill which was only a couple of feet away.</p>	<p>Hot mix</p> <p>Burner operator: Jimmy Davis</p>

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059	This process meant exposure to fumes and dust which he has breathed constantly over the years. Has not had a problem with his respiratory system. There were no seats on the equipment – had to stand all day. There were some injuries over the years but no fatalities. In 1956 old Jack Davis who operated the reciprocating feeders nearly tore off his arm when he caught it in a drum on the feeder belt. Without thinking, he put his hand on the drum to brush off some dirt and his arm was taken, but saved because Ward was near a stop button. Kenny Williams had his hand pulled through a sheet block.	Hazards, injuries Jack Davis
094	Material constantly dropped from the belt elevator which took the metal – gravel and sand - to the silos. It accumulated on the roof and was usually cleaned off but one time it was not and the roof collapsed. One bloke injured his neck and never came back to work.	Roof collapse and injuries
107	DMR were a good employer and looked after the men. South Metropolitan plant was located at Unwin Street in Rozelle. Ward became a leading hand, then a ganger and then senior operator in charge of mixing asphalt. Responsible for plant and maintenance.	South Metrop plant, Rozelle Career progression
129	Looking back, doesn't remember a fast pace. Enjoyed the daily achievements, gave satisfaction if the mix was good.	Satisfaction
151	Not a great range of mixes on the two Armstrongs. Mostly AC mixes until the Penrith F3 and Campbelltown F4 freeways, when a variety of mixes were required – then mostly open grade which had never been made before. In previous years AC5 was a finish mix and then AC10 became a finish mix. Numbers refer to aggregate size. Open mix is made up of normal materials that make AC and in theory on freeways lets water drain through the top coat to avoid aquaplaning. Coarser open grade mix with larger stone, for example the fourteen open grade, provides a noisy surface when driven on. New freeways are quieter due to a denser mix, probably containing sand.	Mixes Freeways

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194	Mix ingredients in the early days were aggregate, bitumen, sand and lime. Later fly ash was used as a filler instead of lime. Fly ash, pioneered by DMR is a by-product of the coal used for power plants. Discovered by an engineering analyst at Rose Hill. Lime came from Berrima by truck or rail. Obtained fly ash for nothing from the Power House at Pymont. Now everyone uses fly ash and must be paid for. Difficulty controlling it when first in use, as it ran like water and so it took a while to get used to it.	Mix ingredients Fly ash
230	Following Armstrong Holland de-commissioning the American plant, Barber Green, was commissioned in 1974. Batches increased from one and three quarter ton each to seven or eight ton mix per batch. Changed also from manual to automatic operation of the plant. Just prior to Armstrongs' decommissioning, Russ Irwin the first engineer manager was appointed. His purpose was to make the industry viable and competitive. The operation became more organised. The crews were more orientated out on the road and the two plants were worked twelve hour days flat out. Freeways being built at this time and contract mix had to be bought in to compensate for low Armstrong capacity. Barber Green capable of 2800 to 3000 tons a day meant less need for contractors. Armstrongs made 1600 tons per day. DMR always had a national plant.	Barber Green Engineer manager Russ Irwin
287	Talks about asphalt storage. After Barber Green plant was commissioned a skip on a winch would go under the pug mill, get the batch and take it up and put it in electrically heated, heavily insulated storage silos. The heating was only at the bottom of the bin to enable the doors to open. Once the bins were full, the material would keep itself heated. If less than full, the cold air on top would set the asphalt, causing lumps to come through and the mix would only be good for twenty four hours.	Asphalt storage

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304	Laboratory took samples and tested for voids and stability of the product. Testing procedure has not changed greatly over the years.	Testing and quality control
320	Mix designs have changed. Use of polymer has changed bitumen mix. Old tyres (crumb rubber) were used in the past over concrete roads. Currently people who spray in flush field work use crumb rubber in bitumen. Moved away from blue metal to river metal for surface mixes. Previously finished with AC5 and now use AC10 and AC14 to strengthen roads to cope with heavier vehicles. Used lime, then fly ash and now RTA has gone back to lime.	Changes in mixes
381	Workplace relationships were quite good generally. His senior position excluded him from a union delegate position. Remembers a dispute when the nipper's position was removed. Nipper got meals and ensured clean amenities. Men went on strike and a court ruled in their favour, due to a precedent of nippers having been employed.	Industrial relations Disputes.
419	End of Tape IEA SYD: FH43 Side B.	

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Tape: IEA SYD: FH44 Side A

000	Tape IEA SYD: FH44 Side A begins	
009	A great achievement was producing a record breaking thirty four hundred tons per day after start up of the Barber Green for the Campbelltown Freeway.	Achievements
019	One day the wire rope on the fully loaded (eight tons) skip broke and hit the deck, breaking all the steel work. After that, the rope was checked and given a life time.	Disasters
035	In 1998 a continuous drum mixer was installed. The triple drum plant was bought from CMI by CSR Emoleum. Was due to be fully operational in February 1999 and in June 1999 the drum mixer was still not in place. The Barber Green which it replaces has only a drying drum. The new model has a dryer drum which is also a mixer and will enable asphalt to be recycled for use. Rap (recycled asphalt) is old asphalt lifted from roads and brought into the yard, put through a crusher and made into 10mm size. It was first used in the 1980s when ten percent was included in the mixers in the production of new asphalt. Now with ready mix, fifteen percent is used.	Continuous drum mixer Rap

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075	<p>CSR Emoleum is concerned that the drum mixer is not yet operational as the company has invested a large amount of money in the new plant. Recycling of asphalt in the old Barber Green plant involved heating raw material up to 230 degrees so that the raw material then heats the rap when they are both mixed in the pug mill. The theory behind the new plant is that more rap can be used – in America fifty percent is used. The plant has an outer shell where the materials go in – the flame does not touch it. The ingredients are mixed and then come down to the front of the drum where the bitumen and filler are added. They are then mixed in the dryer and go out to the elevator. It is predicted that more tonnes per hour will be mixed – up to about 400 tonnes per hour.</p>	<p>Theory behind new mixer</p> <p>Recycling asphalt</p>
099	<p>Have had problems with spraying in the bitumen. There have been blockages. Also having problems controlling the filler. Still much mixing and sampling to be done prior to RTA giving approval of the new drum mixer. Ward is confident that it will be right eventually.</p>	<p>Problems with new mixer</p>
115	<p>RTA still operates a mixing plant at Bellambi on the NSW South Coast – the last one in the state. Says the plant he operated was sold to CSR Emoleum. RTA sold the plant to CSR Readymix in 1992. In 1997 CSR Readymix and CSR Emoleum merged. The transition after sale was smooth and made little difference to employees and working conditions. New company supplies clothes and work boots, not previously supplied by RTA.</p>	<p>RTA owned mixing plant</p> <p>Sale of plant to CSR</p>
148	<p>His most interesting career project was the change over to the new Barber Green plant. It originally had manual scales and then became computerised in 1984. The computer made the job easier. There are three computers on the recently upgraded plant. Says he took easily to the computer. Eventually the computer operated along the lines of plant requirements enabling flexibility.</p>	<p>Most interesting project</p> <p>Change to computers</p>

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181	Spent thirty nine years with the DMR and RTA and the last seven years with CSR. CSR took him on at 58 years of age. He was pleased that CSR wanted him at that age and felt it was due to his knowledge, experience and ability to train people. At sixty five years old he was proud that he could operate the upgraded plant using the three new computers.	Career span
198	Retired Friday July 2 1999. Is pleased that RTA engineers organised a farewell dinner to celebrate his retirement on Friday 9 July – the icing on the cake.	Retirement and farewell
212	Says that despite quality assurance and progress, in his opinion the mixes of the fifties were better than those of today. The workmanship and level of professionalism at the DMR & RTA was better than at private enterprise. Concrete roads had an impact on business, but now people are going back to asphalt.	Comparisons
259	Has no plans for travel – maybe a trip around Australia. Has risen at 4.30am for his entire working life and will enjoy a lie- in. Will play some golf, go to the Parramatta Leagues Club for recreation.	Retirement plans
279	Met his wife at a dance in Fairfield at the Butterfly in 1954. Married in 1957 and has one son who works for CSR Emoleum as a supervisor in profiling. Says his son is more ambitious than he and applied to become a supervisor after only three years. The RTA had wanted Ward senior to become a supervisor but he was happy being with his work mates and got a lot of satisfaction from the kind work he was doing. Feels he has been fortunate to have had one job over such a long period. Has no regrets and is very contented with his life. The company wanted him to stay but was not interested in the prospect of the company running two 12 hour shifts and felt he should make way for some one else.	Wife Son Ambition
356	End of Tape IEA SYD: FH44 Side A and end of interview with Keith Ward.	